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employed is not always as unobjectionable as ordinary drinking water, and also that the water employed is sometimes rendered more or less impure by the careless use of the process it undergoes. Accordingly, figures as high as 528, 960, 1323, and even 1610 bacteria per cc. were found, although, on the other hand, specimens were found which were absolutely sterile.

The following conclusions were reached, viz. :

1. That the ice used for preservative purposes and for the cooling of drinks ought, no matter how prepared, to be made of such water only as has already been found to be pure, and at least as good as that adapted for a public water supply.

2. For the sake of the continuous protection of its composition periodical and repeated examinations should be made of the ice supply and its sources.

Dissection of the Dog as a Basis for the Study of Physiology.—A handsome and conveniently arranged guide to so much of anatomy as may be learned from a fairly thorough dissection of the dog has been prepared by W. H. Howell, of Johns Hopkins University, and published by Henry Holt & Co., of New York. The work is avowedly done by a physiologist for physiological purposes ; and in our opinion it has been done wisely and with discrimination. The worker who is endeavoring to get broad ideas of the position and relation of organs and parts as mechanisms, should never be buried under anatomical minutiæ to him of secondary importance, or confused beforehand by being told minutely what to do, or worse yet, what to see. By giving undue attention to his guide he is distracted from the objects before him, and sooner or later is in danger of losing both the interest and pleasure of discovery and, above all, the final reward of increased power and independence.

The book is not too large, possesses the great merits of simplicity and brevity, and ought to prove a real help to classes of a certain grade, in physiology.—*W. T. Sedgwick.*

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## ZOOLOGY.

The Anatomy of Protopterus.—Prof. W. N. Parker communicates to *Nature* (XXXIX., pp. 19–21) a preliminary note on the anatomy and physiology of *Protopterus annectans,* of which abundant material has recently been received at Freiburg. The whole epidermis is packed with goblet cells, and besides contains here and there multicellular glands like those of Amphibia. The normal epidermal cells are covered with a cuticular cap. The muscles of the body serve as a food supply during the period of hibernation, their substance being carried away by leucocytes. The account of the nervous system is reserved for a later paper, but the fact is mentioned that the pulmonary nerves cross at the base of the lungs. A sympathetic system was not found. The body is well supplied with epidermal sense organs except on the paired fins. The author has no suggestion to make concerning the rich nerve supply of these latter organs. The olfactory organ partakes of the character of that in both Fishes and Amphibia, having the accessory cavities of the latter and the epithelium of the former. The eye has a large lens, the choroid is rudimentary and pigmentless, and iris and pupil are absent. No sense-cells were seen in sections of the tongue. A curious tube-like epithelial organ opens on the floor of the mouth in front of the tongue. Except the large liver no glands were connected with stomach or intestine, digestion being largely performed by the instrumentality of leucocytes. Parker cannot verify Ayres' supposition that the lymphatics connect directly with the lumen of the stomach. The so-called urinary bladder is a cloacal cæcum, having much the position of the rectal gland of Elasmobranchs, and probably has no homology with the urinary bladder of other forms. The corpuscles of the blood are large, and the white are very abundant. The red corpuscles are oval and measure from .040 to .046 mm. in length and from .025 to .027 mm. in breadth. Of the white corpuscles two kinds may be distinguished: (1) large leucocytes of the ordinary form, and (2) leucocytes of various sizes, which, besides the ordinary pseudopodia, form stiff filamentous processes. Experiments render it probable that the latter convey nutriment from the alimentary canal to the blood and there disintegrate. Hyrtl's description of the circulatory apparatus of Lepidosiren would answer almost equally well for Protopterus. There are no nephrostomes in connection with the kidneys. In a male with immature spermatozoa the anterior parts of the Müllerian ducts were present, each with an abdominal opening like that of the oviduct. In sexually mature individuals all traces of the Müllerian ducts disappear. The spermatozoa are carrot-shaped and are provided with two long cilia. The head of the spermatozoan was about .04 mm. in length.

ANOTHER SPECIMEN OF HYLA ANDERSONII.—On June 1, 1888, I found a single specimen of *Hyla andersonii* Baird in a wet place on the border of a pine barren, at May's Landing, N. J. It was quite lively when caught, but it soon became sluggish in confinement. Its voice was shrill and light, comparatively speaking ; and it consisted of a repetition of the same note three or four times in regular succession, in a sort of "peep, peep, peep, peep," as nearly as I can give it. The specimen was sent alive to Dr. C. C. Abbott, of Trenton, N. J., who says, in his "Catalogue of the Vertebrate Animals of New Jersey" (*Geology of N. J.*, Cook, 1868, p. 805) that it is "a Southern species, a single specimen of which was found in Camden Co. in 1863" by Dr. J. Leidy.

Jordan's "Manual of the Vertebrates," 5th ed., says "N. J. to S. C. rare," which statement is still further confirmed by my discovery as given above.

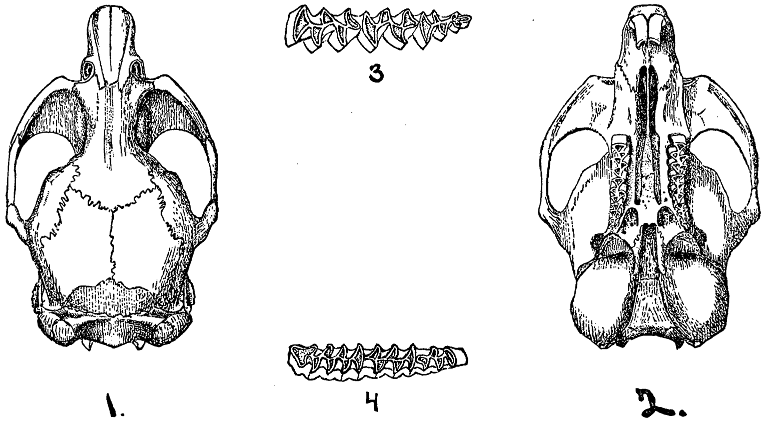
The specimen is still alive, and may be seen by applying to George Pine, Esq., Trenton, N. J.—*John E. Peters, Sc. Doc., May's Landing, N. J.*

A NEW SPERMOPHILUS.—Dr. Merriam has recently described a new species of ground-squirrel from the Sierra Nevadas of California. He calls it *Spermophilus beldingi.* The characters are taken from the coloration and from certain peculiar features of the skull. A broad band of rufous brown runs down the back of the new species, while in the one nearest allied to it the whole back is covered with small spots, giving it a peculiar maculated appearance. The difference in coloration of the two is not due to seasonal changes, as suites of the two species were collected at the same period of the year.—*Jos. F. James.*

THE DEER OF CENTRAL AMERICA have been recently investigated by Mr. F. W. True. All the species are small, even the Virginia deer, which extends that far south. The Mexican deer seems to pass into the Virginian form. All the species are very much mixed up, and few characters seem to be constant enough to certainly characterize the species. The antlers, which have been largely depended upon, he did not consider reliable. A new species was described from the material in the National Museum.—*Jos. F. James.*

AN INTERESTING MAMMAL.—In the last number of the AMERICAN NATURALIST was noticed the discovery of a new Australian mammal. The *Zoologischer Anzeiger* for November 19, 1888, contains a short account by A. Zietz, from which we condense the following additional details. In form and size it resembles Chrysochloris. has a thick, short, fine whitish-yellow pelt, a small head with rounded snout, which is covered above by two horny plates, one behind the other. The skin is not perforated for the eyes, and the eyes themselves are only two black-pigmented points. The ear openings are covered by the fur; the nostrils lateral and slit-like. The salivary glands are very large. The fore feet are short, stout, and directed outwards, and the hands are folded longitudinally, bringing the fingers into two series, one of which is composed of the short digit 1 and digits 2 and 3 with long pointed nails. The other (outer) series consists of the 4th digit, with a small elongate, and digit 5, with a large triangular shield-like nail. The soles of the hinder feet are directed outwards; the toes, which are connected by skin, are armed with broad claws. The long, strong tail is hairless, but has strong transverse ridges and ends in a button. On the belly there is a well-marked pouch, 3 mm. long and 2 mm. (? cm.) wide. No external genital openings were seen. The dentition is very peculiar and appears related to that of Amphitherium of the English Oölite. A clavicle is present. Only a single specimen is known, and that lacks the viscera and is partially decayed. It was found in the sandy region 500 miles north of Adelaide and 150 west from Charlotte Waters. The natives were questioned about it, and only one old woman could recall having seen one before. It appears to be a burrowing animal, and a portion of the alimentary tract which was preserved was filled with the remains of ants. It also appears to be a monotreme, and if the dentition can be relied upon, it forms an interesting remnant of the ancient fauna, and is to-day the oldest living mammal.

A CORRECTION: ARVICOLA (CHILOTUS) PALLIDUS.—The August number of the AMERICAN NATURALIST contains a description of the above-named species (Vol. XXII., 1888, pp. 702–705). Through a most unfortunate blunder, the illustration accompanying this description (p. 704), instead of being the drawing sent with the manuscript, is a figure of *Arvicola* (*Pedomys*) *minor,* which was published with a description of that species in the preceding number of the NATURALIST (July, 1888, p. 599), the same cut being made to illustrate two very distinct subgenera! The accompanying figure is that of *Arvicola* (*Chilotus*) *pallidus,* and should be substituted for that on p. 704 of the August number. In the lettering under the skull of *Arvicola* (*Pedomys*) *minor,* p. 599, the skull number is given as 2245. It should be 2224. C. HART MERRIAM.



No. 4431. Female *Arvicola* (*Chilotus*) *pallidus* Merriam. From Ft. Buford, Dakota (Type) 1 and 2, skull, double natural size; 3, upper molar series, × 5; 4, lower molar series, × 5.

ZOOLOGICAL NEWS.—GENERAL.—Prof. J. B. Steere says (*Nature,* XXXIX., p. 37) that the Philippine Islands are readily divisible into several distinct sub-provinces clearly distinguishable by their faunæ.

These are (1) Northern Philippines, consisting of Luzon and Murinduque and a few small islands around Luzon; (2) Mindoro; (3) Central Philippines, embracing Panay, Negros, Guimaras, Zebu, Bohol, and Masbate; (4) Eastern Philippines, comprising Samar and Leyte; (5) Southern Philippines, made up of Mindanao, Basilau, and perhaps Sulu; and (6) Western Philippines, consisting of Palawan and Balabac.

ECHINODERMS.—Prof. P. Herbert Carpenter is studying the Comatulæ of the "Blake" explorations in the Caribbean Sea.

WORMS.—F. E. Beddard (*Nature*, XXXIX., p. 15) describes some very large hooked bristles upon the caudal end of an earthworm (? Urochæta) received from Bermuda which he suggests are correlated with the habit which most earthworms have of lying with the anterior part of the body out of the ground, only the tail being kept within the hole. These bristles would thus form very efficient anchors.

FISHES.—At a meeting of the Biological Society of Washington, Dec. 1, 1888, Dr. Gill made some remarks on the Psychrolutidæ, a small family of fishes established by Dr. Günther on a specimen found in the Gulf of Georgia. Later, another species found in New Zealand was referred to the same family, and a third was recorded from Patagonia. There seems little reason for making a new family for these three species. They probably belong to a section of the Cottidæ. The occurrence of species in New Zealand and in South America is interesting, inasmuch as it shows representatives of the Cottidæ exist in the Southern as well as in the Northern hemisphere.—*Jos. F. James.*

## ENTOMOLOGY.[1]

ON PREVENTING THE RAVAGES OF WIRE-WORMS.—In a recently published paper,[2] the editor of this department makes a preliminary report on an investigation of wire-worms, now in progress. In the course of this investigation a method of combating these pests has been devised which promises to be of considerable importance.

At the beginning of our study of wire-worms, experiments were tried to ascertain if it were practicable to protect the seed and young

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[1] This Department is edited by Prof J. H. Comstock, Cornell University, Ithaca, N. Y., to whom communications, books for notice, etc., should be sent.

[2] Bull. Cornell Univ. Agr'l Exp. Station, iii., pp. 31–39.